

# Prospective supervisor's form

Name of the supervisor: Tomasz Kolerski

Academic title: PhD DSc

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Discipline: civil engineering and transport [ILiT] environmental engineering, mining and po

Optional

Key words (obligatory four key words describing research interests / expertise):

# River ice dynamics

# Mathematical modeling

# Ice load

# Hydraulics and Hydrology

## Bibliometric indicators

1. Number of journal publications in WoS/ Scopus 16/16

2. Citations excluding self-citations WoS 48 Scopus 48

3. Hirsch index WoS 5 Scopus 4

1. The number of PhD students who have graduated under your supervision: 0

2. The number of PhD students currently supervised:

a. within the current doctoral school 0

b. within doctoral studies (previous syste 1

3. Are you currently accepting new PhD students:

a. Polish Yes/No Yes

b. Foreign Yes/No Yes

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### Research interests or topics offered for PhD research (no more than 2000 characters)<sup>ii</sup>

The following topics for PhD thesis can be implemented but the supervisor's involvement is not limited to them

1. Ice to structure interaction; the topic include but is not limited to: laboratory experiments on ice load on single bridge pier by using commercial and own-made sensors installed in the flume, development of the mathematical model to include ice-to-structure interaction, force calibration and jamming processes affected by the hydro-technical structures, in-field experiments and data analysis for Polish rivers – cooperation with National Water Management Authority 'Wody Polskie'
2. Ice jam dynamics – the main purpose is to analyse the ice jam formation process and potential flood risk generated by the process; the topic will require studying historical data related to ice jams on rivers including the lower Odra and the lower Vistula, as well as the Yellow river in Inner Mongolia; the mathematical modeling of the process will include analyse of the seepage, ice erosion, ice to water resistance, ice jam toe configuration, jam to intact cover interaction – cooperation with National Water Management Authority 'Wody Polskie' and Dalian University of Technology
3. Wind, thermal and salt water effect on ice cover on shallow waters – the topic is concerns mainly on shallow water lagoons in cold regions; The case study of Vistula and Curonian lagoon will be processed by including historical events on polynya formation. The mechanism will be determined and sensitivity study to be conducted . The topic require mathematical modeling and data processing - cooperation with P.P. Shirshov Institute of Oceanology
4. Flow routing and hydrological modeling - the topic covers wide area of rainfall-runoff modeling in natural and developed basins, flood routing modeling in rivers using own numerical tools; reservoir routing modeling and model calibration base on the own data collected on flood detention reservoirs in the city of Gdansk, cooperation with 'Gdańskie Wody'

### Funding or special equipment needed to carry out a PhD project <sup>iii</sup>:

1. Is funding available for experimental work: *Yes/No/not needed*

Yes

2. Is the equipment needed to complete a PhD project

available in your lab/department: *Yes/No/not needed*

Yes

### Most important publications – no more than 5 published after 1.01.2018

No	Authors/title/journal	Number of points according to the current list of the Ministry of Science and Higher Education	Publication year
1.	Kolerski, T., 2018. Mathematical modeling of ice dynamics as a decision support tool in river engineering. <i>Water</i> , 10(9), p.1241.	70	2018
2.	Szydłowski, M., Kolerski, T. and Zima, P., 2019. Impact of the artificial strait in the vistula spit on the hydrodynamics of the Vistula Lagoon (Baltic Sea). <i>Water</i> , 11(5), p.990.	70	2019

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3.	Kolerski, T., Zima, P. and Szydłowski, M., 2019. Mathematical Modeling of Ice Thrusting on the Shore of the Vistula Lagoon (Baltic Sea) and the Proposed Artificial Island. <i>Water</i> , 11(11), p.2297.	70	2019
4.	Kalinowska, D., Wielgat, P., Kolerski, T. and Zima, P., 2020. Model of Nutrient and Pesticide Outflow with Surface Water to Puck Bay (Southern Baltic Sea). <i>Water</i> , 12(3), p.809.	70	2020
5.			

#### Most recent externally funded projects you were involved in – no more than 3

No	Project title, the name of the Principal Investigator (PI) and the institution the project was carried out	Years	Role in the project <sup>iv</sup>
1.	Mathematical modeling of ice dynamics on the proposed Siarzewo reservoir and on the Vistula River downstream of the dam Siarzewo Project no KZGW/KS/306/2019 (PI) Tomasz Kolerski supported by National Water Management Authority 'Wody Polskie'	2019	PI
2.	Feasibility study for comprehensive development of international waterways: E40 for the Vistula River on the section from Gdańsk to Warsaw, E40 from Warsaw to the border with Belarus (Brest), E70 on the section from Vistula to the Vistula Lagoon (Elbląg).supportet by Port of Gdansk Authority	2020	Co-I
3.	WaterPUCK supported by the National Centre for Research and Development within the BIOSTRATEG III program No. BIOSTRATEG3/343927/3/NCBR/2017	2017-2020	R

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### Additional relevant information – (no more than 1600 characters)<sup>v</sup>

In 2017 dr Tomasz Kolerski was selected to the Leadership Team of the Ice Research and Engineering, International Association for Hydro-Environment Engineering and Research – IAHR, currently is a vice-chair of the IAHR Technical Committee on Ice Research and Engineering

- <sup>i</sup> You may select up to two disciplines out of 12 disciplines represented in the Doctoral School
- <sup>ii</sup> Observe the limit of not more than 2000 characters
- <sup>iii</sup> Leave only one answer
- <sup>iv</sup> Select the role in the project: PI stands for principal investigator (refers to the holder of an independent grant and the lead researcher for the grant project), Co-I for co-investigator (Co-I assists the principal investigator in the management and leadership of the research project), R for researcher
- <sup>v</sup> Add any other relevant information e.g. awards for PhD students whom you supervised (no more than 1600 characters)